**Dynamic Equilibrium**

**Getting Students Dynamic in the Classroom**

Introduction

The initial teaching of the concept of chemical equilibrium tends to generate many misconceptions in the students as they fail to fully understand the idea of equilibrium and Le Chatelier’s principle and cannot grasp how reactions rates play a role in setting up an equilibrium in which the concentrations of the reactants and products differ. In addition, it is often found at the end of the unit that the students are able to work through the mathematics of a typical equilibrium problem without a good understanding of the underlying principles.

To address these problems, teachers have generated many activities designed to give the students a better understanding of how equilibrium actually proceeds. The activity presented here is a kinesthetic activity that can be used at the beginning of the unit when equilibrium is first introduced. In the activity, students split into two groups and opposite sides of the classroom and throw balled-up pieces of paper back and forth to mimic a chemical reaction. Various parameters, such as number of students on a side and initial distribution of paper can be changed and the effects on equilibrium examined. While this activity works well for an initial unit minds on, it could also be used as a review or used multiple times whenever the students are unclear about a new idea.

Ministry Expectations: SCH4U

* Explaining chemical equilibrium (E2.1, E3.1, E3.2)
* Applying Le Chatelier’s principle (E2.2, E3.3)

Initial Activity

1. Split the students into equal groups, each student with a crumpled up piece of paper and have groups move to opposite sides of classroom
2. When teacher says start, students start throwing the paper across the room.
3. As the activity progresses, students will find new pieces of paper and continue to throw them back and forth across the room
4. At pre-designated intervals (20-30seconds), the students will stop, take a quick tally of pieces of paper per side and then continue.
5. Allow activity to go for 1-2 minutes
6. Change parameters as per the list below and repeat the activity

Subsequent Activities

How to change up the activity to show various concepts:

* Start with all the pieces of paper on one side of the classroom
* Vary the number of students per side (3/4 on one side and 1/4 on other)
* Add more pieces of paper

To make the activity more quantitative:

* Designate one “records” keeper per side
* Stop the activity at shorter intervals (5-10seconds) and count up paper
* Graph the results (paper vs. time)

Reference

http://hsscience-chemoise2010.wikispaces.com/file/view/%28Appendix+A%29+Activity+-+Paper+Equilibrium+Lab.pdf